REPORT 1: IRANIAN AIR DEFENSES — SURVIVABILITY AGAINST U.S. OPENING SEAD/DEAD CAMPAIGN

Assessment Level: High Confidence (Post-2025 War Performance, Documented ORBAT, Doctrinal Adaptations)
Assumption: Iran has implemented all post-June 2025 doctrinal and structural adaptations (decentralized C2, hardened communications, redundant radar coverage, shoot-and-scoot protocols, and Chinese augmentation).

EXECUTIVE SUMMARY

The Islamic Republic of Iran Air Defense Force (IRIADF/PADAJA) has evolved from a point-defense network into a **layered, survivable, and increasingly networked Integrated Air Defense System (IADS)**. Drawing on lessons from the 12-Day War, Iran has prioritized:

1. **Decentralized Command:** Local sector autonomy (via Fakour C2) ensures continued resistance even if national-level command is disrupted.
2. **Redundant Sensor Coverage:** VHF counter-stealth radars (Matla-ul-Fajr, YLC-8B), passive EO/IR networks (Hafez), and OTH radars (Nazir) provide multiple detection layers resilient to jamming.
3. **Mobile "Shoot-and-Scoot" Doctrine:** Medium-range systems (3rd Khordad, Tabas, Raad) and strategic systems (Bavar-373) are designed to fire and relocate rapidly, denying U.S. SEAD forces targeting solutions.
4. **Strategic Reserves:** The S-300PMU-2 batteries, while partially attrited in 2025, have been reconstituted and supplemented by Bavar-373 and reported Chinese YLC-8B radars and potential HQ-9B acquisitions.
5. **Chinese Augmentation:** YLC-8B anti-stealth radars (700 km detection range, mobile) and BeiDou-3 encrypted navigation (immune to jamming) fundamentally alter the detection and engagement timeline.

Bottom Line Up Front: A U.S. opening SEAD/DEAD campaign will achieve **temporary degradation but not systemic destruction** of Iran's IADS. The network is designed to absorb the first blow, attrite the attacker, and retain sufficient capability to cue retaliatory strikes and defend remaining high-value assets. The cost of achieving air superiority over Iran has risen dramatically.

SECTION 1: THE ARCHITECTURE OF RESILIENCE

1.1 Command & Control — The Brain

System	Function	Wartime Adaptation	Survivability Factor
Fakour C2	Tactical-level command post (SOC/Group)	Decentralized; operates autonomously if national link severed	**High** — Fiber-optic and hardened datalinks; local autonomy
Rasool Comms	Links MuF radars to C2/SAMs	Redundant microwave, fiber-optic; frequency agility	**High** — Resistant to jamming
Ya Zahra Network	National IADS integration	"Protocol 7" severs compromised western nodes, shifts control to Isfahan	**Very High** — Demonstrated in 12-Day War
Meraj-4 Radar	High-tier battle management	Mobile on trailer; can operate independently	**High** — Not integral to every battery; redundant

Assessment: The U.S. will target national-level C2 nodes (ADOC, major SOCs) with cyber/EW and kinetic strikes in the opening minutes. However, Iran's decentralized architecture ensures that **regional sectors retain autonomous combat capability.** Even if Tehran is isolated, Isfahan, Tabriz, Bandar Abbas, and Mashhad can continue coordinating defenses independently.

1.2 Early Warning & Detection — The Senses

1.2.1 Counter-Stealth Detection Layer (VHF/UHF)

Radar	Band	Range	Mobility	Deployment	Notes
YLC-8B (Chinese)	UHF AESA	700 km (ballistic), 500 km (conventional), 350 km (tactical)	Mobile (30-min setup)	Reported delivered (Feb 2026); likely Tehran, Fordow, Natanz, Bandar Abbas	**Game-changer** — Specifically designed to detect B-2, F-35, F-22; degrades stealth penetration
Matla-ul-Fajr 2/3	VHF	480-500 km	Mobile	Nationwide (key sites)	Detects stealth at long range; 3D version provides height data
Matla-ul-Fajr 1	VHF	300 km	Mobile	Deployed at nuclear sites, SOCs	2D, but cues engagement radars

Kavosh	UHF	150 km	Mobile	Short-range, cruise missile/drone detection	Fills low-altitude gaps
Hafez	EO/IR (Passive)	Varies	Fixed/mobile	Mountain passes, western approaches	Detects stealth via thermal/optical means; alerted F-35 penetrations in 2025

Assessment: The combination of VHF/UHF counter-stealth radars and passive EO/IR networks means **U.S. stealth aircraft (F-35, F-22, B-2) will be detected at long range.** The YLC-8B's 350 km tactical detection range against stealth fighters eliminates the element of surprise. While weapon-quality tracks may still be challenging at extreme range, cueing of SAMs and interceptors becomes possible much earlier.

1.2.2 OTH & Strategic Surveillance Layer

Radar	Range	Coverage	Notes	
Nazir	800 km	NE/Central Iran, Afghanistan, Turkmenistan	Elevated (2900m); covers northern approaches	
Ghadir	~1100 km	Southern coast, Gulf of Oman	Legacy, being supplemented	
Sepehr	3000 km (claimed)	Broad area	Experimental/limited	
Chinese Satellite ISR	Global	Persistent coverage (Yaogan, Jilin-1, Gaofen)	Provides real-time tracking of U.S. force movements; erodes operational surprise	[Defence Security Asia, Feb 2026]

Assessment: U.S. strike packages will be detected and tracked from the moment they form up over tankers or launch from carriers. The element of tactical surprise is **eliminated.**

1.3 Engagement Systems — The Teeth

1.3.1 Strategic/Long-Range Layer (200km+)

System	Inventory (Est. Post-War)	Missile	Mobility	Notes

Bavar-373	2-3 batteries (expanding)	Sayyad-4A (200 km), Sayyad-4B (300 km)	Mobile (8x8 TELAR)	AESA radars; anti-stealth; TVM/SAGG/ARH guidance; survived 2025 war
S-300PMU-2	2-3 batteries (reconstituted)	48N6E2 (195 km)	Mobile	At least one battery destroyed in 2025; survivors reconstituted
HQ-9B (reported)	Under negotiation	300 km	Mobile	Potential acquisition to plug gaps
S-200VE	5 sites (retained)	S-200 (240 km)	Semi-mobile	Legacy; anti-ISR/AWACS role

Assessment: The strategic layer has been partially attrited but not destroyed. Bavar-373 batteries, with their AESA radars and TVM/ARH guidance, pose a significant threat to high-value aircraft (AWACS, tankers, bombers) and stealth penetrators. Their mobility (8x8 TELAR with integral CW radar) complicates SEAD targeting.

1.3.2 Medium-Range Layer (40-100km)

System	Inventory	Missile	Mobility	Notes
MIM-23 Hawk / Mersad	16-18 sites	MIM-23A/B (40 km), Shahin (indigenous)	Semi-mobile	Workhorse; some augmented with Raad TELARs; 2025 performance mixed but survivable
3rd Khordad	Multiple batteries	Sayyad-2C (70 km)	Highly mobile	Ambush platform; shot down RQ-4 in 2019
Tabas	Multiple batteries	Sayyad-2 (70 km)	Highly mobile	Similar to 3rd Khordad
Talash-2/3	3+ batteries	Sayyad-2 (70 km), Sayyad-3 (120 km)	Mobile	Protects S-200 sites; Sayyad-3 emerging
Raad	2+ batteries	Raad (70 km)	Highly mobile	IRGC-operated; augments HQ-2 sites
15 Khordad	Multiple batteries	Sayyad-3 (120 km)	Mobile	Medium-range; practiced at Khondab

Assessment: The medium-range layer is the most numerous and mobile. These systems are **specifically designed for ambush tactics**—emitting briefly, firing, and relocating. U.S. SEAD forces (F-16CJ,

EA-18G) will face a **hunter-killer environment** where emission control is mandatory and exposure is punished.

1.3.3 Short-Range/Point Defense Layer (10-40km)

System	Inventory	Missile	Mobility	Notes
Tor-M1E	2-3 sites	9M331 (12 km)	Mobile	VSHORAD for nuclear sites
Pantsir-S1	Limited	57E6 (20 km)	Mobile	Point defense; some may have been damaged
Majid	Expanding	Majid (10 km)	Mobile	Indigenous Pantsir copy
MANPADS	Thousands	Misagh-1/2, QW-1/18 (5 km)	Man-portable	Ubiquitous; complicates low-altitude operations

Assessment: Even if strategic and medium-range layers are degraded, short-range systems protect key assets and complicate low-altitude strike profiles. U.S. aircraft will face a **"flak trap"** if forced low by medium-range threats.

SECTION 2: THE U.S. SEAD/DEAD CAMPAIGN — FORCE PACKAGE AND AXES OF ATTACK

2.1 U.S. SEAD/DEAD Assets (From Provided Charts)

Asset	Quantity	Role	Base/Location
EA-18G Growler	12	Electronic Attack (Jamming, Suppression)	6x Muwaffaq Salti (Jordan), 6x USS Lincoln
F-16CJ (Weasels)	12	SEAD (Anti-Radiation Missiles)	Prince Sultan AB (Saudi Arabia)
F-35A	66	Stealth Penetration, Targeting	54x Lakenheath (UK), 12x Muwaffaq Salti
F-15E Strike Eagle	36	Strike, DEAD (Dynamic Targeting)	Lakenheath
A-10C	~24	CAS, "Sandy" role (CSAR support)	Muwaffaq Salti

Tomahawk TLAM	498 (theater inventory)	Pre-planned strikes on fixed IADS nodes	DDGs, SSGNs (USS Georgia)
B-2 Spirit	CONUS-based (not listed)	Deep strike on hardened C2/nuclear sites	Missouri (surge)

2.2 Likely Axes of Attack

Axis	Launch Platforms	Targets	Advantages	Vulnerabilities
Western (Jordan/Iraq)	F-35A, F-15E, EA-18G, A-10	Western IADS nodes (3rd Khordad, Tabas, Hamedan SOC), IRGC missile bases	Shortest distance to western Iran; surprise possible	Within range of Iranian SRBMs; predictable
Southern (Persian Gulf/Gulf of Oman)	Carrier-based F/A-18E/F, EA-18G, TLAM	Coastal IADS (Bandar Abbas, Bushehr, Chabahar), naval infrastructure, YLC-8B sites	Tomahawk saturation; carrier mobility	Confined waters; vulnerable to ASBM/ASCM
Northern (Turkey/Azerbaijan/Caspian)	F-15E (Lakenheath), tanker-dependent	Northwestern IADS (Tabriz, IRGC bases), nuclear sites	Flanks western defenses	Long range; tanker vulnerability
Eastern (Afghanistan/Pakistan airspace)	B-2, F-35A (with tankers)	Deep targets (Fordow, Natanz, Tehran)	Surprise possible	Overflight rights uncertain; long range

2.3 Opening SEAD/DEAD Sequence (Projected)

Phase	Timing	Actions	Iranian Counter
Cyber/EW Opening	H-15 min	Cyber attacks on Ya Zahra network; EA-18G/EC-37B jamming of Ghadir, Najm radars	Protocol 7: sever compromised nodes, shift to Isfahan; activate reserve frequencies; passive EO/IR cueing
Tomahawk First Wave	H-Hour	200-300 TLAMs target fixed IADS: SOCs, known SAM garrisons (S-300, Bavar-373 sites), radars, C2 nodes	Mobile SAMs (Bavar-373, 3rd Khordad) on "shoot-and-scoot" have vacated fixed sites; decoys absorb TLAMs; hardened C2 survives

Stealth Penetration (F-35A/F-22)	H+30 min	Deep strikes on strategic SAMs (Bavar-373, S-300) and C2 nodes	YLC-8B, MuF-3, Hafez detect tracks; cue point-defense (Pantsir, Majid) and alert SAMs; intermittent tracks, but surprise lost
SEAD Hunt (F-16CJ, EA-18G)	H+60 min	Targeting radiating SAMs with AARGM-ER	SAMs follow "shoot-and-scoot": emit briefly, fire, relocate; passive Mersad-16 ambushes SEAD flight

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SECTION 3: SURVIVABILITY ASSESSMENT — SYSTEM BY SYSTEM

3.1 Early Warning Radars

Radar	Survivability Against Opening Strike	Rationale
YLC-8B	**High**	Mobile (30-min setup); likely camouflaged; if detected, difficult to kill; Chinese-supplied, hardened design
Matla-ul-Fajr series	**Moderate-High**	Mobile; often co-located with SAMs; shoot-and-scoot doctrine; some may be attrited, but network retains coverage
Nazir	**Moderate**	Fixed elevated site; vulnerable to TLAM; but multiple OTH radars provide redundancy
Ghadir/Najm	**Low-Moderate**	Fixed; likely targeted; but being supplemented by mobile systems and Chinese satellites
Hafez (EO/IR)	**Very High**	Passive; emits nothing; cannot be targeted by ARM; survives entire campaign

Assessment: The radar network will be **degraded but not blinded.** YLC-8B and MuF radars will survive in sufficient numbers to provide early warning. Passive EO/IR networks remain fully operational.

3.2 Strategic SAMs (Bavar-373, S-300)

System	Survivability	Rationale

Bavar-373	**High**	Mobile 8x8 TELAR with integral radar; designed for shoot-and-scoot; AESA radars have LPI; can operate autonomously; some may be lost, but batteries survive
S-300PMU-2	**Moderate**	Mobile, but older; some batteries destroyed in 2025; survivors reconstituted and dispersed; likely to be targeted again

Assessment: Strategic SAMs will take losses, particularly if caught during set-up or if emission control discipline fails. However, the combination of mobility, LPI radar, and decentralized command ensures that **at least 50-60% of strategic batteries survive the opening hours** to contest follow-on strikes.

3.3 Medium-Range Mobile SAMs (3rd Khordad, Tabas, Raad, Mersad)

System	Survivability	Rationale
3rd Khordad/Tabas/ Raad	**Very High**	Highly mobile; designed for ambush tactics; emission control; dispersed across Zagros valleys; U.S. SEAD cannot find and fix all
Mersad (Hawk)	**Moderate**	Semi-mobile; some at fixed sites; may be attrited, but many survive in revetted positions

Assessment: These are the **most survivable** elements of the IADS. They are Iran's equivalent of "guerrilla SAMs"—they will emerge from hides, fire, and vanish. U.S. SEAD will kill some, but the majority will remain operational throughout the campaign.

3.4 Short-Range/Point Defense

System	Survivability	Rationale
Pantsir/Majid	**Moderate**	Collocated with high-value targets; will engage incoming munitions; some may be destroyed by blast effects or follow-on strikes
Tor-M1E	**Moderate**	Protected nuclear sites; heavily defended; but fixed locations make them targetable
MANPADS	**Very High**	Man-portable; dispersed; cannot be targeted by air; ubiquitous threat to low-flying aircraft

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SECTION 4: RESILIENCE FACTORS — WHY THE IADS WON'T COLLAPSE

4.1 Decentralized C2 (Fakour, Protocol 7)

The 12-Day War demonstrated that Iran can **lose national-level command and still fight.** Each SOC (regional HQ) has autonomous authority to engage. The Fakour C2 system, deployed at group level, ensures that even if an SOC is destroyed, subordinate batteries can coordinate locally.

4.2 Redundant and Diverse Sensors

Iran no longer relies on a single sensor network. It has:

- **VHF/UHF counter-stealth radars** (YLC-8B, MuF)
- **Passive EO/IR** (Hafez)
- **OTH radars** (Nazir, Ghadir)
- **Chinese satellite ISR** (Yaogan, Jilin-1)

Jamming or destroying one layer does not blind the network. Even if all ground radars in a sector are suppressed, passive EO/IR can cue SAMs to within engagement range.

4.3 Shoot-and-Scoot Doctrine

All modern Iranian SAMs (Bavar-373, 3rd Khordad, Tabas, Raad, Talash) are designed to:

- Emit briefly (seconds)
- Fire 1-2 missiles
- Relocate immediately (under 5 minutes)

This defeats the U.S. SEAD kill chain, which requires:

- Detect emission
- Geolocate
- Launch ARM (flight time)
- Impact

By the time the ARM arrives, the SAM is gone.

4.4 Decoys and Camouflage

Iran has invested heavily in decoy SAM sites, fake radars, and camouflage. U.S. targeting intelligence will be forced to discriminate between real and fake, expending limited PGMs on worthless targets.

4.5 Chinese Augmentation

- **YLC-8B:** Mobile, long-range, anti-stealth. Provides strategic early warning that cannot be suppressed without direct targeting.

- **BeiDou-3:** Encrypted military-grade navigation ensures Iranian SAMs and missiles retain precision even under GPS jamming.
- **Satellite ISR:** Real-time tracking of U.S. force movements allows Iranian commanders to anticipate strike packages and reposition defenses accordingly.

SECTION 5: WHAT SURVIVES — THE POST-OPENING IADS

After the opening 48-72 hours of intense SEAD/DEAD, the following Iranian IADS capabilities are assessed to remain:

Layer	Surviving Capability	Function
Early Warning	YLC-8B (1-2 batteries), MuF radars (50-60%), Hafez (100%), Chinese satellites	Detect follow-on strikes, cue SAMs, track U.S. movements
Strategic SAM	Bavar-373 (2 batteries), S-300 (2 batteries)	Engage high-value aircraft (AWACS, tankers, bombers), protect remaining HVT
Medium-Range Mobile SAM	3rd Khordad/Tabas/Raad (70-80%), Mersad (50%)	Ambush strike packages, deny air superiority over key regions
Point Defense	Pantsir/Majid (50%), Tor (50%), MANPADS (100%)	Protect remaining HVT, complicate low-altitude operations
C2	Fakour nodes (80%), SOCs (60%), decentralized autonomy	Coordinate remaining defenses, integrate with missile forces

Bottom Line: The IADS will be **attrited but not defeated.** It will retain the ability to:

- Detect and track follow-on U.S. strike packages.
- Engage high-value aircraft with strategic SAMs.
- Ambush strike packages with mobile medium-range SAMs.
- Protect remaining high-value targets with point defense.
- Cue Iranian missile forces against U.S. assets.

SECTION 6: IMPLICATIONS FOR THE U.S. CAMPAIGN

6.1 Cost of Air Superiority

Achieving uncontested air superiority over Iran would require:

- **Weeks of sustained SEAD/DEAD operations**, not hours.
- **Expenditure of hundreds of additional PGMs and ARMs** (beyond the 498 TLAMs in theater).
- **Acceptance of aircraft losses** (F-16CJ, F-15E, possibly F-35) to SAM ambushes.
- **Continuous tanker support**, with tankers themselves vulnerable to Iranian long-range missiles and drones.

6.2 Operational Constraints

- **No Sanctuary:** U.S. bases (Muwaffaq Salti, Al Udeid, Prince Sultan) will be under constant Iranian missile and drone attack, reducing sortie generation.
- **Tanker Vulnerability:** Iranian long-range missiles (Khorramshahr-4, Sejjil) can target tanker orbits over Iraq, Jordan, and Saudi Arabia, crippling deep strike packages.
- **Satellite Transparency:** Chinese ISR means every U.S. move is observed and reported to Iranian commanders.

6.3 What the IADS Enables for Iran

A surviving IADS, even a degraded one, enables Iran to:

1. **Protect Retaliatory Missile Forces:** By denying U.S. aircraft free rein over Iranian airspace, the IADS buys time for missile TELs to launch and relocate.
2. **Cue Counter-Strikes:** Radar tracking of U.S. aircraft and naval assets provides targeting data for Iranian missiles (ASBMs, ASCMs, LACMs).
3. **Maintain Deterrence:** The knowledge that U.S. aircraft will face SAM threats on every sortie raises the cost and risk of continued operations, potentially hastening a political end to the conflict.

CONCLUSION

The Iranian IADS in February 2026 is not the brittle, point-defense network of 2010. It is a **layered, survivable, and networked system** designed to absorb a first strike, attrite the attacker, and retain residual capability throughout a prolonged campaign.

A U.S. opening SEAD/DEAD campaign will achieve:

- **Degradation of fixed, known sites** (S-300 garrisons, SOCs).
- **Attrition of some mobile SAMs** caught in the open.
- **Temporary suppression of radar emissions** in some sectors.

It will **not** achieve:

- Systemic destruction of the IADS.
- Elimination of counter-stealth detection.
- Freedom from SAM ambushes for follow-on strike packages.
- Prevention of Iranian missile retaliation.

The IADS will survive to fight another day. And in that fight, it will be supported by the very missile forces it is protecting—creating a synergistic defense that U.S. planners must account for in any escalation calculus.